

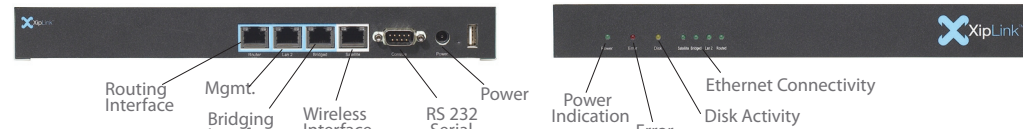
XA-Appliances

Hardware Specifications

Model XA-50 and Model XA-500

Set Top Box

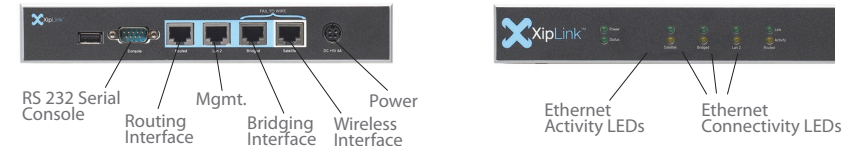
Height	Width	Depth	Weight	Temp. Range	Power	Certifications
30 mm	290 mm	170 mm	.9 kg	0° to -60° C	14 W	CE / FCC
1.2 inches	11.4 inches	6.8 inches	2 lbs.	32° to 140° F	14 W	CE / FCC



Model XA-2000

Set Top Box

Height	Width	Depth	Weight	Temp. Range	Power	Certifications
35 mm	225 mm	155 mm	1.6 kg	0° to 60° C	45 W	CE / FCC
1.4 inches	8.9 inches	6.1 inches	3.5 lbs.	32° to 140° F	45 W	CE / FCC



Model XA-4000 and Model XA-10K

1U - Rack Mount

Height	Width	Depth	Weight	Temp. Range	Power	Certifications
44 mm	430 mm	393 mm	6 kg	5° to 45° C	350 W	CE / FCC
1.7 inches	16.9 inches	15.5 inches	13.2 lbs.	41° to 113° F	350 W	CE / FCC



Model XA-30K

2U - Rack Mount

Height	Width	Depth	Weight	Temp. Range	Power	Certifications
88 mm	430 mm	500 mm	17kg	0° to 40° C	500 W	CE / FCC
3.5 inches	16.9 inches	19.6 inches	37.5 lbs	32° to 104° F	500 W	CE / FCC



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XipLink

XA-Appliances Overview

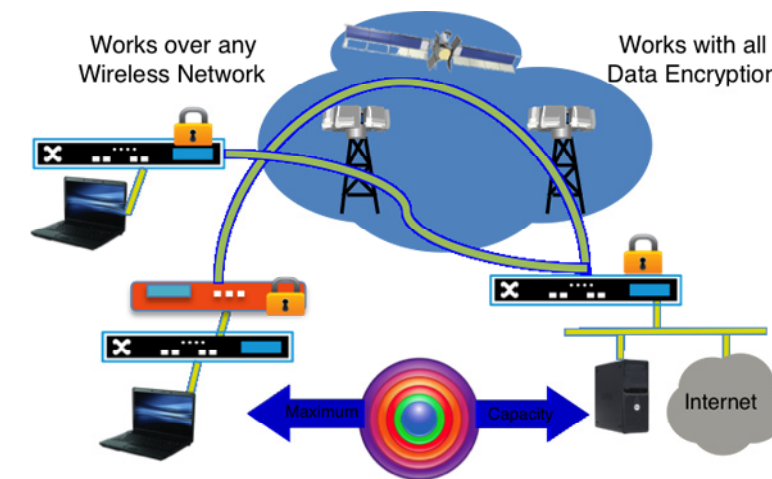


XA-Appliances

Maximum Wireless Capacity

Increased throughput and reduced cost

XA-Appliances deliver the most advanced satellite and wireless optimization in easy to install appliances, right-sized for the bandwidth and number of users at each location. For small and medium sized sites, set-top-box appliances are easily installed without the need for trained IT staff. For very high speed links or central aggregation sites, fully redundant appliances can optimize links up to 155 Mbps and support thousands of simultaneous sessions, typically increasing bandwidth from 2X to 10X for all TCP applications.



XipOS works between users of any two devices of any type. A central XA-Appliance can support remote users of devices with XE-Embedded XipOS, the XS-104 single board computer or users with a XipStick portable optimizer. Based on the SCPS specification, XipOS optimization simultaneously works with secure and un-secure users over any wireless network

VSAT - TDMA / SCPC / Mesh / MSS

3G / 4G Cellular - Interconnect and Backhaul

Terrestrial Point-to-Point and Point-to-Multipoint

LTE / WiMax / WiFi - CPE to Base Station links

XipLink Optimization Software (XipOS)

SCPS-TP Protocol Acceleration

Fills the wireless link to capacity

- SCPS-TP based TCP acceleration
 - I-PEP compliant for U.S. DoD
- XipLink Transport Controls (XTC)
 - Fixed Rate Control Mode
 - Dynamic Rate Control Mode
 - Programmable Rate Control
 - Basic Rate Control Mode
- User configured Error Recovery modes

Streaming Data Compression

Exceeds the wireless link bandwidth

- Delivers 2x to 10x in bandwidth gain
- Reduces the number of packets

Internet Optimizations

Makes Web Surfing Fast

- Internet Pre-Fetching and Fast Start
- Dynamic Web Cache hardware option

Security - Optimize Encrypted data

Install with any type of Encryption

- Integrated IPsec VPN encryption option

Easy to Install and Manage

Operates over any Wireless Topology

- Space based wireless data links
- Terrestrial wireless data links



XA - Appliances

XO - Options

XS - Specialty Products

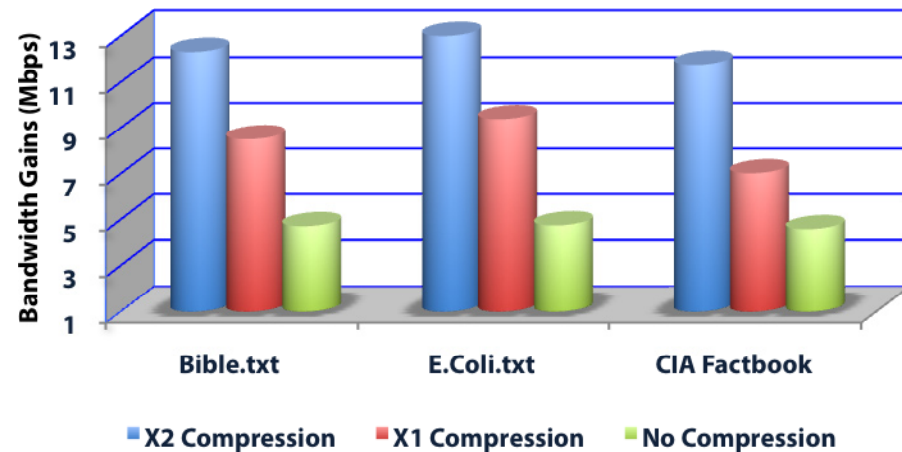
XE - Embedded XipOS

XA-Appliances

XipLink Optimization Software (XipOS)

XipLink Optimization Software (XipOS) delivers maximum bandwidth across wireless communication links using extensions of the Space Communication Protocol Specification (SCPS).

Protocol acceleration, streaming data compression and Internet web browsing enhancements are combined in very efficient, easy-to-install appliances, single board computers and portable devices with options for integrated IPSec VPN and Dynamic Web Caching.



Remote user sessions are transparently split, or proxied, with new sessions opened across the link using protocol acceleration and streaming data compression to overcome common wireless issues:

- Varying latency (delay) because of long links and users roaming*
- High bit error rates because of constantly changing RF link conditions*
- Link asymmetry because of smaller, lower power remote radios*

XipOS optimization parameters are dynamically negotiated using extensions to the industry standard Space Communications Protocol Specification (SCPS), which is designed to support default and proprietary vendor options to increase link capacity while ensuring interoperability and transparent optimization for all TCP based applications.

There are no topology limitations or tunnels in a system based on SCPS, establishing a foundation that allows a network operator to deploy an XA-Appliance at the hub-side or logical center of any wireless network and immediately increase the bandwidth for those users that also utilize a SCPS based remote device, typically from 2X to 10X for all TCP applications.

The hub-side of a space based network is an earth station Teleport, while the logical center of a terrestrial network may be a fiber-to-radio aggregation facility or ISP point-of-presence. Unless specifically prohibited by the network operator, any two users will optimize their link capacity anytime a pair of optimizers bracket the wireless link, regardless of how the software is deployed.

Easy to Deploy and Manage

- Completely transparent to users
- Layer 2 - Bridge installation (typical remote)
- Layer 3 IP Router installation (typical hub site)
 - RIP / OSPF / BGP routing protocols
 - Redundant appliances use CARP
- Centralized configuration option

Optimize any Wireless Network Topology

- VSAT - Star Topologies
- Mesh networks of any size
- Dedicated SCPC links
- Terrestrial Point to Point links
- Terrestrial Point to Multi-Point links

SCPS-TP Protocol Acceleration

- Fast-Start algorithms
- Acknowledgment Frequency Reduction
- Selective Negative Acknowledgement

Streaming (across packets) Data Compression

- Proprietary streaming data compression
 - X1 and X2 modes for efficiency
 - Dynamic Active Resource Management

Internet Optimizations

- Web Object Pre-fetching / Fast Start
- Dynamic Web Cache hardware option

XipOS Transport Controls (XTC)

- Fixed Rate Control
- Dynamic Rate Control
- Programmable Rate Control
- Basic Rate Control

Flexible Deployment Options

- XA-Appliances
- XS-Specialty Products
 - XipStick Portable Optimizer
 - XS-104 Single Board Computer
- XE-Embedded XipOS
 - BSD, Linux, Windows devices

XA-Appliances for Maximum Bandwidth

Model	Bandwidth	Sessions	Typical Use	XipLink Products
XA-50	2 Mbps	50	Small Office / Vehicles	
XA-500	4 Mbps	500	Medium Office / Vehicles	
XA-500C	4 Mbps	500	Web Cache Hardware Option	
XA-2000	8 Mbps	2,000	Medium to Large Offices	
XA-4000	16 Mbps	4,000	Data Center Applications	
XA-4000C	16 Mbps	4,000	Web Cache Hardware Option	
XA-10K	45 Mbps	10,000	Large Office / Teleport	
XA-30K	155 Mbps	30,000	Very High Data Rates	
VPN-xxxx	All	Variable	IPSec Software Option	

XA-Appliances with XipLink Optimization Software

SCPS-TP Protocol Acceleration

- Kernel based using XipLink Dynamic Socket Buffers
- Transparent operation as SCPS-TP proxy gateway
- Satlabs I-PEP compliance for interoperability
- XipOS Transport Control modes
 - Fixed Rate Control mode*
 - Programmable Rate Control mode*
 - Dynamic Rate Control mode*
 - Basic Rate Control mode*
- User configured Error Recovery methods
- Selective acceleration or bypass using rules

Quality of Service

- DSCP classification and re-marking
- TCP Weighted Fair Queuing per logical network class
- UDP / VOIP or other data prioritization
- Logical Network QoS Classes to scale hub sites
- Integrated with XipOS Transport Control modes

Data Compression Algorithms

- Multiple, simultaneous algorithms (X1 and X2)
- Active Resource Manager for dynamic control

Internet Optimizations

- Dynamic Web Cache hardware option (disk)
- HTTP Object Pre-Fetch
- TTCP Fast Start
- Compression of HTML text data

Hardware

- RS- 232 serial console serial or out-of-band management
- Flash drive resilience for reliability (image backup)

Management

- Web based graphical user interface uses HTTPS
- SSH secure command line interface
- Standard and Proprietary SNMP MIB's for monitoring
- NetConf based central configuration model
- Real time reporting and graphing on each appliance
- Remote upgrades using Configuration Profiles

Network and Redundancy Capabilities

- Installs as Layer 2 Bridge or Layer 3 IP Router
- Dynamic routing protocols - BGP, RIP, OSPF
- Redundant appliances use CARP protocol - Hot Standby
- Remote devices can use simple on-board Fail-to-Wire
- IP Version 6 Routing

Virtual Private Networking (VPN)

- XipOS optimization operates over any encrypted network
- Includes commercial and military encryption types
- Installed in-line to optimize the data before encryption
- IPSec VPN software option for any XA-Appliance
- Enables on-board 128 / 256 bit AES encryption